National Science Foundation

Goal Area: Building a research base

Summary: NSF currently operates two programs that directly address building the research base in learning and teaching mathematics and science, and several other programs that make investments in this area. The Research on Learning and Education (ROLE) Program (NSF 03-542) supports research across a continuum that includes the neuroscientific basis of human learning; cognitive science; science and mathematics learning in formal and informal educational settings; and changing educational systems to improve science and mathematics. The Interagency Education Research Initiative (IERI, www.ed.gov/offices/IES/ieri/ieri_rfa.pdf) is a joint effort of the Institute for Education Sciences, the National Science Foundation and the National Institute for Child Health and Development (NICHD). IERI supports research that investigates the effectiveness of educational interventions in reading, mathematics, and the sciences as they are implemented in varied school settings with diverse student populations. (NSF outlines education research opportunities available in programs other than ROLE and IERI in the ROLE Program Announcement, at http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf03542.)

Purpose: ROLE: These projects advance the knowledge base about learning science and mathematics across the continuum described above, and contribute to the theoretical and evidentiary foundation for the programs that the NSF Directorate for Education and Human Resources (EHR) offers. **IERI**: These projects systematically investigate the process of scaling-up the implementation of education interventions that have already garnered significant evidence of effectiveness in multiple settings. ROLE projects are generally smaller in scope, and are among the kinds of research activities that may eventually be candidates for IERI support.

Accomplishments/Results: The ROLE Program has supported approximately seventy research projects that have produced a significant body of findings across a spectrum of science and mathematics learning and education, including the integration of information and communication technology (ICT) in education. The IERI program has supported a similar number of projects in building an infrastructure of research on scaling to improve student learning and achievement in mathematics, reading, and the sciences, and in establishing more rigorous methodologies and measures to promote a science of scaling up research. ROLE and IERI Programs have undergone formal Committee of Visitor (COV) reviews within the past year, as part of the agency requirement for triennial external review for all programs. The COV reviews strongly affirmed the overall positive direction of each program and contributed important suggestions for the evolving direction of each program.

Plans for the Next 12 Months: Both programs are now offered under updated program announcements for FY03, although each will maintain the general focus identified above. Among the shifts for ROLE are a greater emphasis on building connections between ROLE and the other programs in the EHR Directorate; a deeper integration of the ROLE Program with the directorate's efforts to conduct a program in evaluative research (ROLE and the Evaluative Research Program now appear in a joint solicitation); and a more focused effort to build within ROLE projects a trajectory for research activities that include IERI-type investigations if effectiveness has been established for interventions that ROLE Projects conduct. Proposals for ROLE are due June 1 and December 15. IERI will continue to support research to identify conditions under which effective evidence-based interventions to improve preK-12 student learning and achievement succeed when applied on a large scale, in the focus areas of reading, science and mathematics. While all awards under IERI must draw on interventions that have already established evidence of effectiveness, the Program accommodates areas of research that differ in their readiness for scaling up. It supports Phase I awards to provide investigators with an opportunity to prepare for broad scale-up. Phase II awards are larger and available for projects that are fully prepared to study the effectiveness of an intervention as implemented in significant numbers of varied educational settings.